

**REMARKS:**

Claim Rejection - 35 USC §102 or §103

Claims 1, 3, 4, and 11 have been rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Brassow et al. (4,906,135) in view of Williams (5,202,522).

The Examiner asserts that Brassow teaches the entire process of the invention as claimed in claims 1, 3, 4, and 11, with the exception of the placement of the disposal of the waste in a spent oil well containing halophilic, thermophilic, and methanogenic microbes. He relies on Williams to teach waste disposal in a sealed empty spent oil well, stating that it would have been obvious to have practiced the Brassow process in a spent oil well, since one of ordinary skill in the art would know that a spent oil well is equivalent to a salt dome for purposes of waste disposal. He further asserts that either the acid and caustic storage tanks (35 and 40) of Brassow anticipate the redox tank required in each of the independent claims, *or* that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the Brassow process with a redox tank in order to process waste. This rejection is improper for several reasons which will be detailed herein.

First of all, caustic tanks and acid tanks are not the same as a redox tank. The purpose of a redox tank is to reduce the presence of oxygen in the slurry in order to keep the spent oil well's chamber free from oxygen contamination, which is desirable for two reasons: As pointed out on page 5 of the specification, an anaerobic condition is conducive for the production of gases, especially methane, which will be harvested as a source of fuel from the spent oil well where the

waste is stored. Secondly, oxygen in the spent oil well chamber is undesirable because the presence of oxygen would increase the likelihood of the development of an explosive atmosphere in the chamber. This oxygen contamination is avoided by the processing of the waste slurry through a redox tank. Neither processing it through the acid storage tank or the caustic storage tank of Brassow would accomplish the reduction of oxygen.

The Examiner states that “if it is deemed that the redox plant is not anticipated by Brassow, then it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the Brassow process with a redox plant [sic], in order to process waste”. The Examiner does not give any reason as to *why* he believes the incorporation of a redox tank into the process of Brassow would have been obvious or what purpose it would have served. Unlike the present invention, which deposits a slurry (which is a fluid) into a spent oil well with bacteria that will react with the elements of the slurry to create gases usable as fuel, Brassow deposits already solidified waste into a salt dome which is chosen specifically because it is a non-reactive environment (see col. 3, lines 40-45 of Brassow). There is no teaching by, and no reason for, Brassow to process the waste to reduce the oxygen, since the solidified waste is not expected to have any further chemical reaction to create either a usable fuel or a potentially explosive environment. Therefor, the Examiner’s position that Brassow either anticipates the redox tank or, in the alternative, that, absent any teaching whatsoever, it would have been obvious to one of ordinary skill in the art to have used the Brassow process with a redox plant is strongly objected to by Applicant.

Another problem with this rejection is the assertion that it would have been obvious at the time of the invention to have practiced the Brassow process in a spent oil well since one of

ordinary skill in the art would know that a spent oil well is equivalent to a salt dome for purposes of waste disposal. Applicant's assertion of the equivalence of a salt dome and a spent oil well for the purposes of waste disposal is incorrect, as pointed out by Brassow himself in columns 3 and 4 of his patent. He actually teaches away from using his process to deposit waste in an oil well. At column 3, lines 40-50 it is stated that "disposal of waste in salt formations has many distinct advantages" and that "The salt formation is non-reactive to virtually all chemicals with the exception of lithium and flourides in their concentrated forms." By contrast, a spent oil well is not a non-reactive environment. In column 4, lines 28-39 he notes that salt formations and oil and gas deposits are generally located near one another, but there is no mention whatsoever of the possibility of using a spent oil well, rather than a salt formation, for waste storage. In fact, it is stated that an advantage to salt formation storage is that "salt formations are not affected by the presence of oil and gas operations". Considering that a critical element of the present invention, as pointed out in the arguments submitted with the last amendment and by recitation in each of the independent claims, is the presence of halophilic, thermophilic, and methanogenic microbes (which are inherent to spent oil wells, but *not* to salt domes) in order to chemically react with the waste slurry to break it down, a salt dome is most definitely *not* equivalent to a spent oil well for purposes of waste disposal.

As for the Examiner's assertion that Williams teaches waste disposal in a sealed empty spent oil well which inherently includes the microbes required by the claims, this is also inaccurate. At col. 3, lines 53-36, Williams teaches the disposal of a mixture of concrete and waste in a metal pipe that happens to be located above a spent oil well, but only after he places a "clean concrete plug in the bottom of casing 2 to seal off hydrocarbon producing formation 14",

i.e. the spent oil well. Thus, rather than teaching disposing of waste within a spent oil well, he requires that the concrete/waste mixture be isolated from the spent oil well, including the microbes that would be found there, by an extensive plug of concrete located at the bottom of the pipe.

Therefor, even if one were to consider it obvious, without any teaching, to incorporate a redox tank into the process of Brassow, and to ignore his teaching that a salt dome is desirable due to its non-reactive properties, and look to the Williams patent for a teaching for a new location in which to deposit the waste, the end results would still not meet the limitations of the claims. At best, one would end up with solidified waste (not a slurry as required by the claims) positioned between plugs of concrete in a submerged piece of pipe (not in a spent oil well as required by the claims), with the waste intentionally isolated from the very microbes required by the claim.

As for claim 3, Applicant disagrees with the Examiner's statement that Brassow teaches providing a conduit as called for in claim 3. Claim 3 requires providing the pumping plant with an inlet conduit coupling said pumping plant to the spent oil well and pumping treated slurry into the spent oil well. As stated above, Brassow discloses disposing of solidified waste in a salt dome, whereas claim 3 requires pumping a slurry into a spent oil well, so it is unclear on what the Examiner is basing his statement that the limitations of claim 3 are met by Brassow.

In light of the forgoing arguments, it is respectfully requested that the Examiner reconsider and withdraw his rejection of these claims and indicate them as allowable.

### Claim Rejections - 35 USC §103

Claims 5-8 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Brassow et al. in view of Williams, as applied to claim 4 above, and further in view of Berezoutsky (4,417,829), Butler (4,474,053), and Cummings (5,413,432).

Claims 5-8 and 10 depend from claim 1, whose limitations, for the reasons discussed above, are not met by the combination of Brassow et al. and Williams. The addition of Berezoutsky (4,417,829), Butler (4,474,053), and Cummings (5,413,432) does nothing to overcome the shortcomings of Brassow et al. and Williams. In his rejection, the Examiner takes Official Notice of the fact that it is well known to provide buildings with ventilation conduits in order to provide fresh air. That's as may be, however, as can be clearly seen in Fig. 1 of the present application in combination with page 13 of the specification, ventilation conduit 148 of the present invention does not provide the building with fresh air, but rather provides a vent for relief of chamber pressure built up due to the introduction therein of a large volume of slurry, as well as ventilation from the chamber of any non-usable biogases produced within the chamber. In other words, it is ventilating the chamber not the building. It is *not* well known to ventilate a building with the off-gassing of chemical reactions taking place in a spent oil well below the building.

Berezoutzky is concerned with underground storage of liquified gas, so his use of a specimen collecting conduit and displaceable extraction conduit in order to collect samples from underground make sense in the context of the process of his invention. Taking his specimen collecting conduit and displaceable extraction conduit and combining it with either Brassow or Williams or a combination of the two, however makes no sense whatsoever. Brassow disposes of

waste in a solid form, encases it in metal, and selects the place to deposit it for the express purpose of eliminating any further chemical reactions. There would be no motivation at all to collect underground samples from the waste disposal site. Williams teaches the disposal of waste in a pipe between two plugs of clean concrete and covered by whipstock “to be sure that the integrity of the radioactive waste storage is maintained even if someone should in the future remove cap 20 and try to drill through the cement plug” (see col. 3, lines 60-col. 4, line 2), making it clear that access to the waste storage site is to be avoided. Given this teaching there is also no reason to combine the specimen collecting equipment of Berezoutsky with the waste disposal system of Williams. Even if one were to decide that it makes sense to combine the gas sampling equipment of Berezoutzky with the solid waste being stored by either Brassow or Williams, while the Berezoutsky reference does generally teach the concept collecting samples through a conduit, there is no disclosure of the chamber extraction conduit having “displacement means connected thereto for vertical displacement of said chamber extraction conduit thereby enabling gaseous samples to be obtained from different levels within said spent oil well” as required by claim 5. Claim 6 requires the step of obtaining samples from the treated slurry, but given the fact that the waste stored by both Brassow and Williams is solid, it is not clear how Berezoutzky’s teaching of sampling stored liquified gas, even if one could figure out a way to combine it with Brassow and Williams, would yield the steps required by the limitations of claim 6 to sample slurry. Similarly, given the fact that the solid waste of both Brassow and Williams is non-reactive and is therefore not producing any waste, it is unclear why one would be motivated to electronically monitor the waste products, nor, given that there is no teaching by any of the references to store waste within an oil well, how the requirement of claim 7 that the waste products *in* the spent oil well are being

electronically monitored would be met.

The Examiner asserts that Butler teaches the desirability of sampling and monitoring underground disposal sites, but lines 6-21 of col. 1 of Butler make clear that he is concerned with the storage of “large volumes of gases or liquids with relatively high vapor pressure”, not with the solid waste disposal of Brassow or Williams, which has no vapor pressure. The teachings of Butler have nothing whatsoever to do with the waste disposal systems of Brassow or Williams, and there is no motivation to combine these references.

The Examiner relies upon Cummings for teaching that it is known to generate electricity from gas, specifically by burning methane, as required by claim 10. The Examiner appears to ignore the requirement in claim 10 that the methane burned is harvested from the spent oil well where the stored waste is producing it. It is unclear where the Examiner believes gas would be coming from in the non-reactive solid waste disposal systems of either Brassow or Williams, so Applicant fails to understand how the Cummings reference can be combined with these two base references, or how the limitations of the claims can be considered to be met by any such combination.

In summary, the process of Brassow et al. involves solidifying the waste prior to inserting it into a salt dome where it is encased in a plurality of concentrically disposed casings cemented into place within the salt dome. The Williams process involves depositing waste to solidify within a buried piece of metal pipe, the waste being isolated from contact with any other environment by cement plugs positioned both above and below the waste to be stored. There is no likelihood, nor intention, that the stored solid waste in either of these references would include or create materials such as liquids or gases whose levels or contents might change over time such that sampling or

monitoring over time or at different levels within the chamber would be desirable. Therefore the incorporation into the solid waste storing system of Brassow et al. or Williams of the liquid and gas sampling and monitoring devices of Berezoutsky and Butler would be unnecessary and unobvious. Similarly, inasmuch as no gas is created by the concentrically encased solid waste which is disposed of by Brassow and Williams, there would be no motivation to combine the Cummings's device for generating electricity from gas with the non-gas producing waste storage system of Brassow or Williams, since there would be no gas being created to generate electricity with.

For all of these reasons, the Examiner is respectfully urged to reconsider and withdraw his rejection of these claims and indicate their allowability.

Claim 12 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Brassow et al. in view of Williams, as applied to claim 11 above, and further in view of Berezoutsky (4,417,829), Butler (4,474,053), and Cummings (5,413,432).

Claim 12 is substantially equivalent to claim 5, and this rejection is improper for all the same reasons detailed in the remarks above with respect to claim 5. It is respectfully requested that the rejection of claim 12 be withdrawn and its allowability indicated.

**CONCLUSION:**

In light of the fact that the limitations of the claims are not met by the prior art relied upon for the rejection, and that there would be no reason, as pointed out in the above arguments, to combine the references relied upon by the Examiner in the way that is done in the rejections, it is respectfully requested that the Examiner reconsider and withdraw the rejections of the claims. It is believed that all the claims now pending in the present application are allowable, and the present application is in condition for allowance. Accordingly, favorable reconsideration of the application in light of the remarks is respectfully requested.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned representative at the number listed below.

Respectfully submitted,



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